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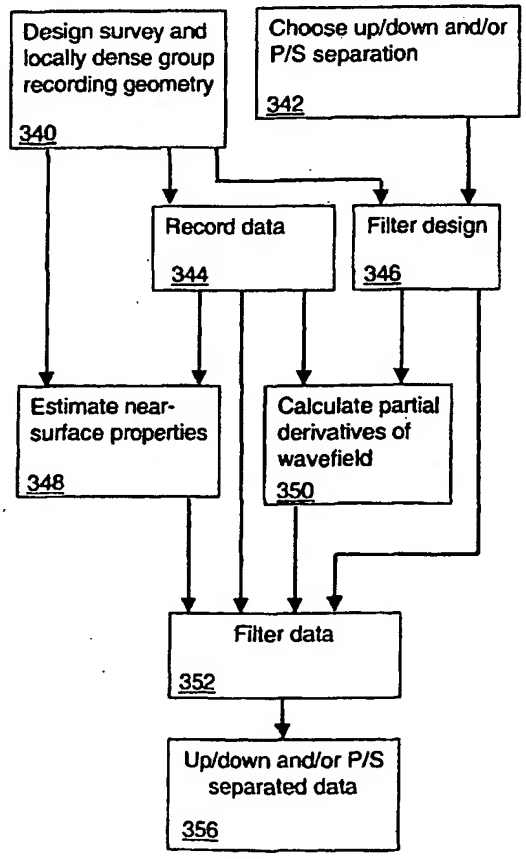
(54) Title: SYSTEM AND METHOD FOR SEISMIC WAVEFIELD SEPARATION



(57) Abstract: A system and method of creating a filter for use with locally dense seismic data is disclosed. The method includes obtaining survey geometry characteristics from a locally dense seismic survey. A filter is designed which uses spatial derivatives of the wavefield of order between (1) and the maximum order of spatial derivatives of the wavefield that can be estimated within a group. The filter can be designed so as to separate up/down going components, p/s components, or both up/down and p/s components. Partial derivatives in space and time of the wavefield can be calculated, using, for example, a taylor series expansion as an approximation. The seismic data is filtered by combining estimated near surface material properties, the seismic data, and the calculated partial derivatives.

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